Dell Precision M3800
Owner's Manual

Regulatory Model: P31F
Regulatory Type: P31F001

Notes, Cautions, and Warnings

NOTE: A NOTE indicates important information that helps you make better use of your computer.

CAUTION: A CAUTION indicates either potential damage to hardware or loss of data and tells you how to avoid the problem.

WARNING: A WARNING indicates a potential for property damage, personal injury, or death.

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1

Working on Your Computer

Before Working Inside Your Computer

Use the following safety guidelines to help protect your computer from potential damage and to help to ensure your personal safety. Unless otherwise noted, each procedure included in this document assumes that the following conditions exist:

- You have read the safety information that shipped with your computer.
- A component can be replaced or--if purchased separately--installed by performing the removal procedure in reverse order.

WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance

CAUTION: Many repairs may only be done by a certified service technician. You should only perform troubleshooting and simple repairs as authorized in your product documentation, or as directed by the online or telephone service and support team. Damage due to servicing that is not authorized by Dell is not covered by your warranty. Read and follow the safety instructions that came with the product.

CAUTION: To avoid electrostatic discharge, ground yourself by using a wrist grounding strap or by periodically touching an unpainted metal surface, such as a connector on the back of the computer.

CAUTION: Handle components and cards with care. Do not touch the components or contacts on a card. Hold a card by its edges or by its metal mounting bracket. Hold a component such as a processor by its edges, not by its pins.

CAUTION: When you disconnect a cable, pull on its connector or on its pull-tab, not on the cable itself. Some cables have connectors with locking tabs; if you are disconnecting this type of cable, press in on the locking tabs before you disconnect the cable. As you pull connectors apart, keep them evenly aligned to avoid bending any connector pins. Also, before you connect a cable, ensure that both connectors are correctly oriented and aligned.

NOTE: The color of your computer and certain components may appear differently than shown in this document.

To avoid damaging your computer, perform the following steps before you begin working inside the computer.

1. Ensure that your work surface is flat and clean to prevent the computer cover from being scratched.
2. Turn off your computer (see Turning Off Your Computer).
3. If the computer is connected to a docking device (docked) such as the optional Media Base or Battery Slice, undock it.

CAUTION: To disconnect a network cable, first unplug the cable from your computer and then unplug the cable from the network device.

4. Disconnect all network cables from the computer.
5. Disconnect your computer and all attached devices from their electrical outlets.
6. Close the display and turn the computer upside-down on a flat work surface.

   NOTE: To avoid damaging the system board, you must remove the main battery before you service the computer.
7. Remove the main battery.
8. Turn the computer top-side up.
9. Open the display.
10. Press the power button to ground the system board.

    CAUTION: To guard against electrical shock, always unplug your computer from the electrical outlet before opening the display.

    CAUTION: Before touching anything inside your computer, ground yourself by touching an unpainted metal surface, such as the metal at the back of the computer. While you work, periodically touch an unpainted metal surface to dissipate static electricity, which could harm internal components.
11. Remove any installed ExpressCards or Smart Cards from the appropriate slots.

Turning Off Your Computer

CAUTION: To avoid losing data, save and close all open files and exit all open programs before you turn off your computer.

1. Shut down the operating system:
   - In Windows 8:
     - Using a touch-enabled device:
       a. Swipe in from the right edge of the screen, opening the Charms menu and select **Settings**.
       b. Select the ⏻ and then select **Shut down**
     - Using a mouse:
       a. Point to upper-right corner of the screen and click **Settings**.
       b. Click the ⏻ and select **Shut down**.
   - In Windows 7:
     1. Click **Start**.
     2. Click **Shut Down.**

     or

     1. Click **Start**.

2. Click the arrow in the lower-right corner of the **Start** menu as shown below, and then click **Shut Down.**.

2. Ensure that the computer and all attached devices are turned off. If your computer and attached devices did not automatically turn off when you shut down your operating system, press and hold the power button for about 4 seconds to turn them off.

After Working Inside Your Computer

After you complete any replacement procedure, ensure you connect any external devices, cards, and cables before turning on your computer.

CAUTION: To avoid damage to the computer, use only the battery designed for this particular Dell computer. Do not use batteries designed for other Dell computers.

1. Connect any external devices, such as a port replicator, battery slice, or media base, and replace any cards, such as an ExpressCard.
2. Connect any telephone or network cables to your computer.

   CAUTION: To connect a network cable, first plug the cable into the network device and then plug it into the computer.
3. Replace the battery.
4. Connect your computer and all attached devices to their electrical outlets.
5. Turn on your computer.

2

Removing and Installing Components

This section provides detailed information on how to remove or install the components from your computer.

Recommended Tools

The procedures in this document may require the following tools:

- Small flat-blade screwdriver
- #0 Phillips screwdriver
- #1 Phillips screwdriver
- T5 Torx screwdriver
- Small plastic scribe
- Flash BIOS update program CD

System Overview

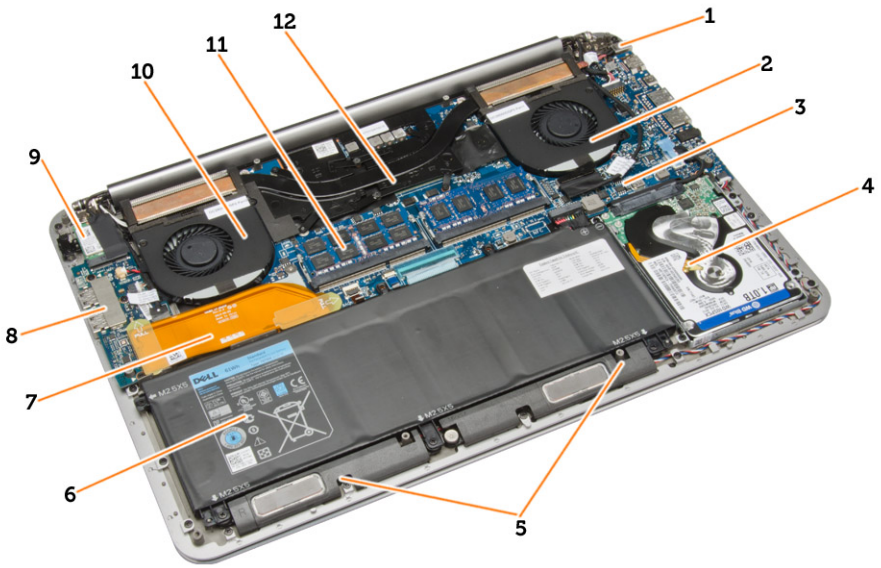


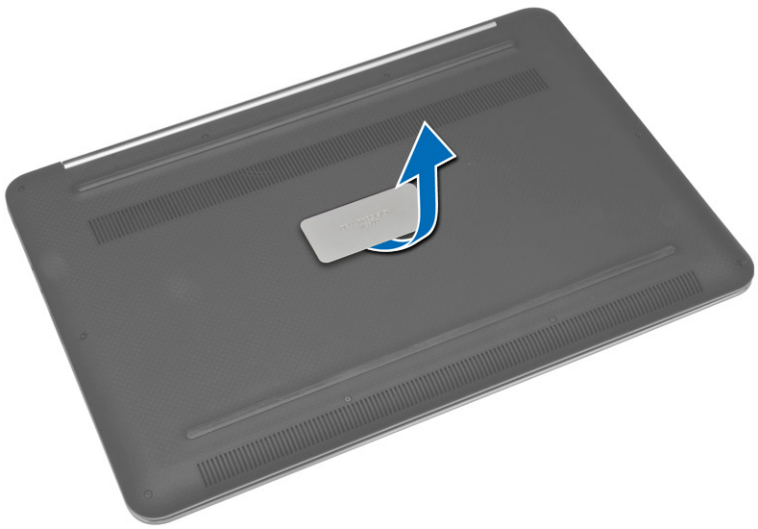
Figure 1. Inside View — Back

1. DC-in
2. system fan
3. system board
4. hard drive
5. speakers
6. battery
7. I/O board connector
8. I/O board

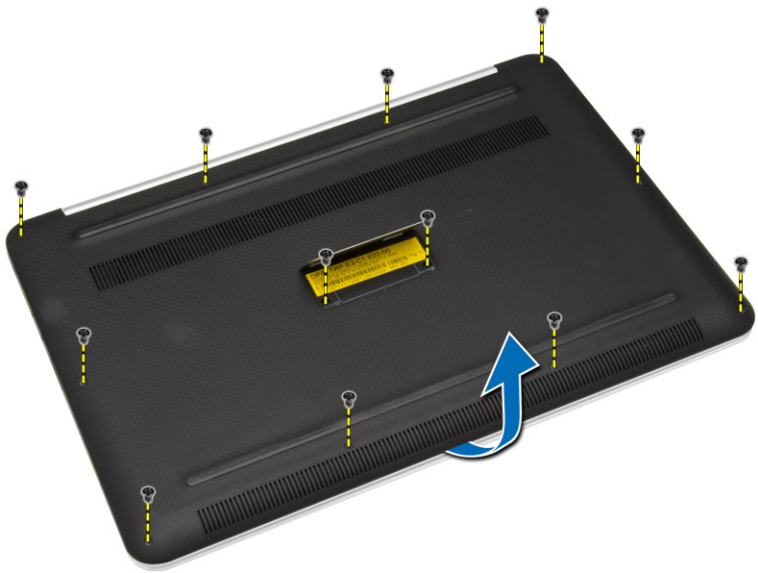
9. WLAN card
10. video-card fan
11. memory modules
12. heatsink

Removing the Base Cover

1. Follow the procedures in *Before Working Inside Your Computer*.
2. Close the display and turn the computer over.
3. Turn the system badge over and place it on the base cover.



4. Remove the screws that secure the base cover to the palmrest assembly.



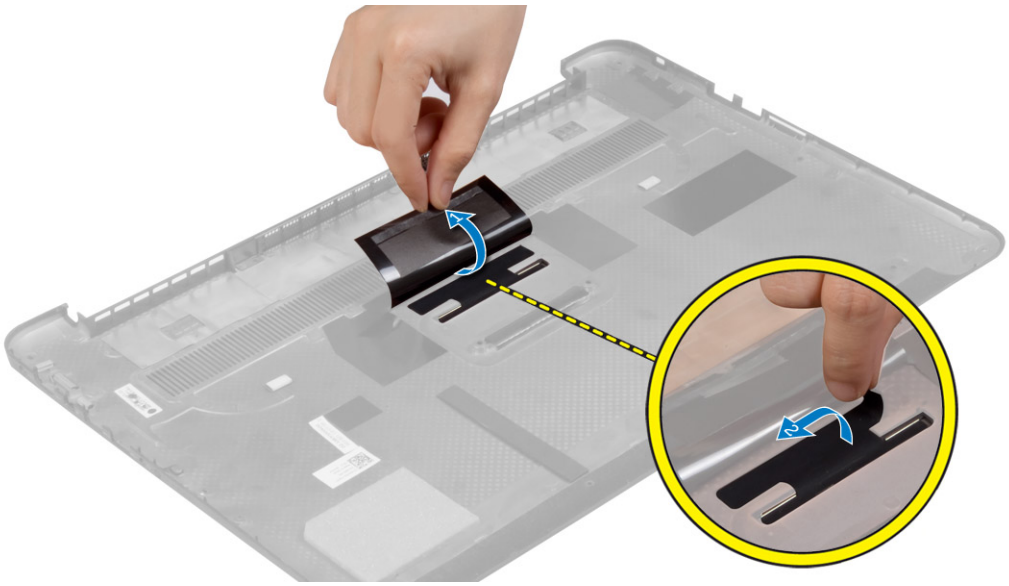
5. Lift up and remove the base cover from the palmrest assembly.

Installing the Base Cover

1. Place the base-cover assembly on the palmrest assembly and snap it into place.
2. Tighten the screws to secure the base cover to the computer.
3. Turn the system badge over and snap it in place.
4. Follow the procedures in *After Working Inside Your Computer*.

Removing the System Badge

1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove the base cover.
3. Peel the Mylar tape that secures the system badge to the base cover.



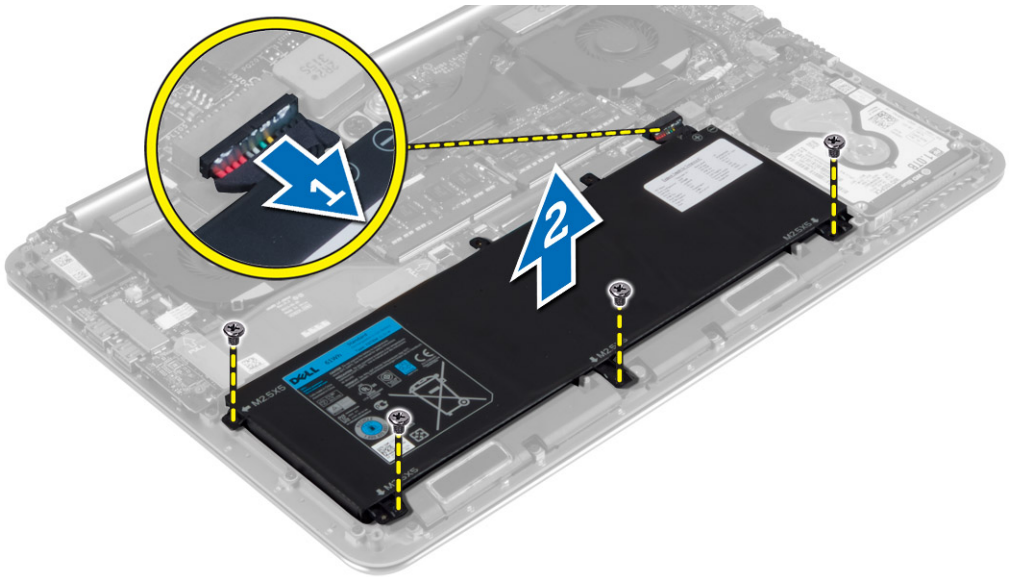
4. Release the tab on the system badge from the slot on the base cover. Lift the system badge off the base cover.

Installing the System Badge

1. Slide the tab on the system badge into the slot on the base cover and snap the system badge into place.
2. Turn the base cover over.
3. Affix the Mylar tape that secures the system badge to the base cover.
4. Follow the procedures in *After Working Inside Your Computer.*

Removing the Battery

1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove the base cover.
3. Perform the following steps to remove the battery:
   a) Disconnect the battery cable from the system board.
   b) Remove the screws that secure the battery to the palmrest assembly.
   c) Lift the battery off the palmrest assembly.

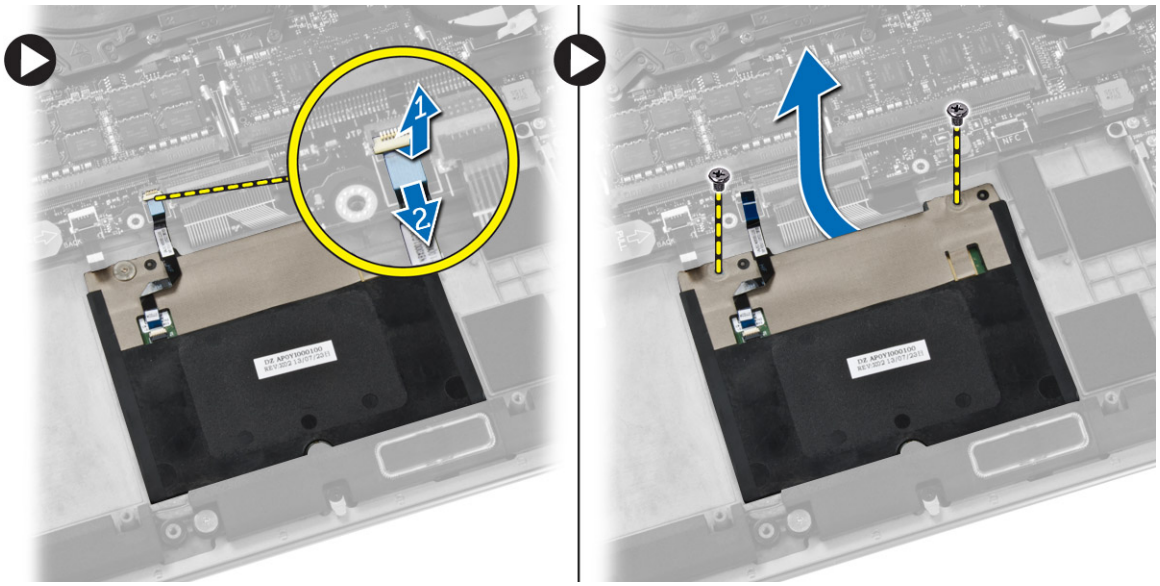


Installing the Battery

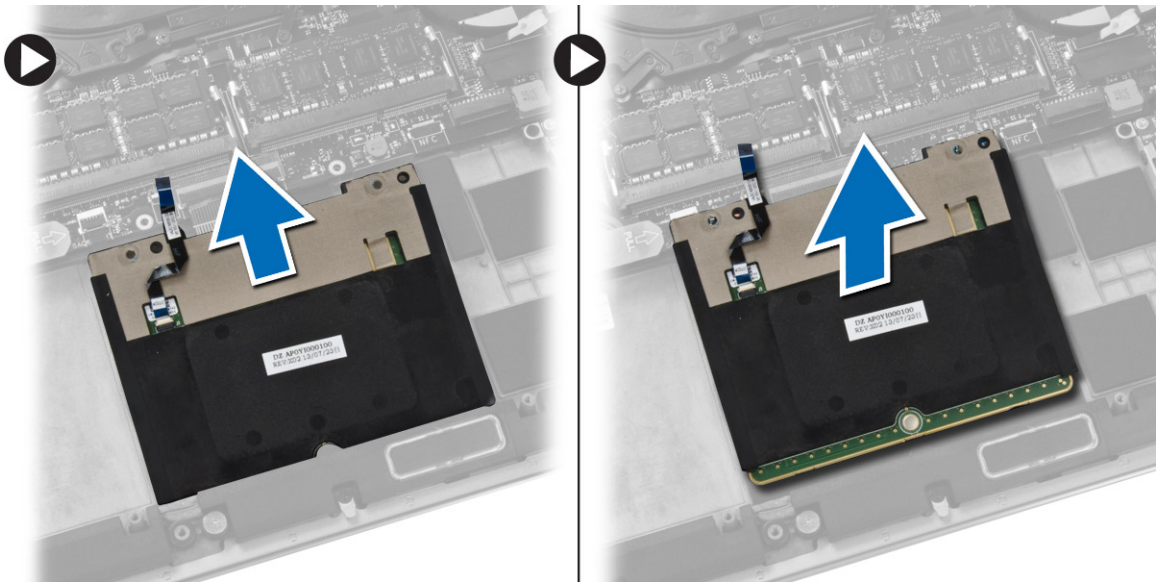
1. Tighten the screws that secure the battery to the palmrest assembly.
2. Connect the battery cable to the system board.
3. Install the base cover.
4. Follow the procedures in *After Working Inside Your Computer.*

Removing the Touchpad

1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove the:
   a) base cover
   b) battery
3. Disconnect and remove the touchpad cable from the system board. Remove the screws that secure the touchpad to the computer.



4. Slide out the touchpad and lift it away from the computer.

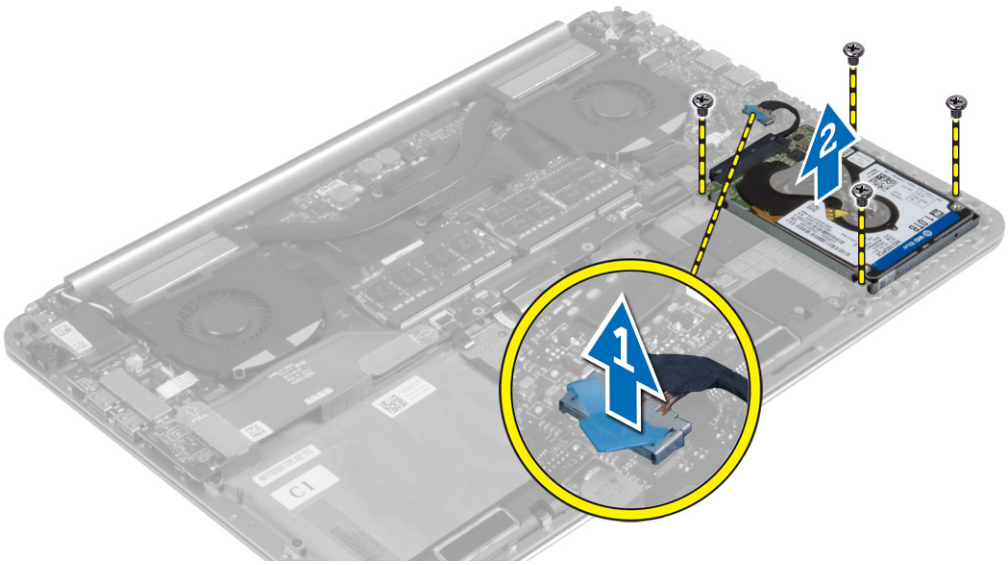


Installing the Touchpad

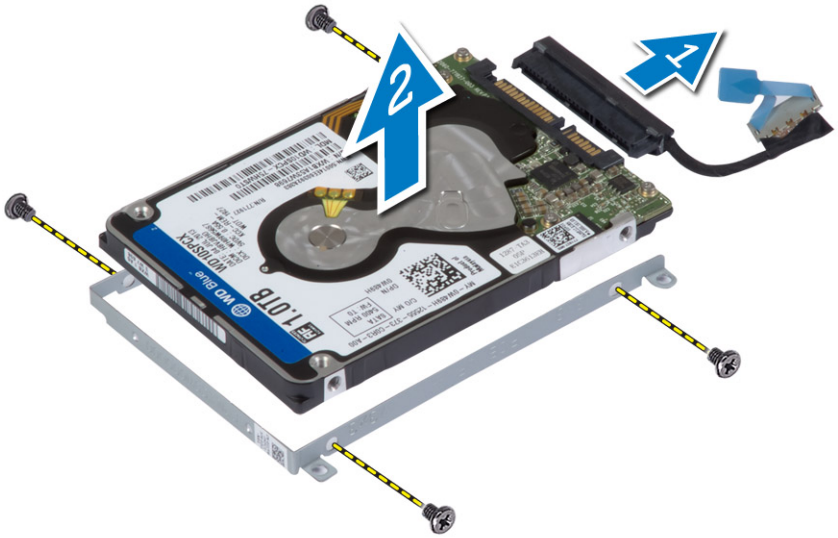
1. Align the touchpad in its position on the computer.
2. Tighten the screws to secure the touchpad to the computer.
3. Connect the touchpad cable to the system board.
4. Install the:
   a) battery
   b) base cover
5. Follow the procedures in *After Working Inside Your Computer*.

Removing the Hard Drive

1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove the:
   a) base cover
   b) battery
3. Perform the following steps to remove the hard drive from the palmrest assembly:
   a) Disconnect the hard-drive cable from the system board.
   b) Remove the screws that secure the hard drive to the palmrest assembly.
   c) Lift the hard drive off the palmrest assembly.



4. Perform the following steps to remove the hard-drive bracket:
   a) Disconnect the interposer from the hard drive
   b) Remove the screws that secure the hard-drive bracket to the hard drive.
   c) Lift the hard drive off the hard-drive bracket.

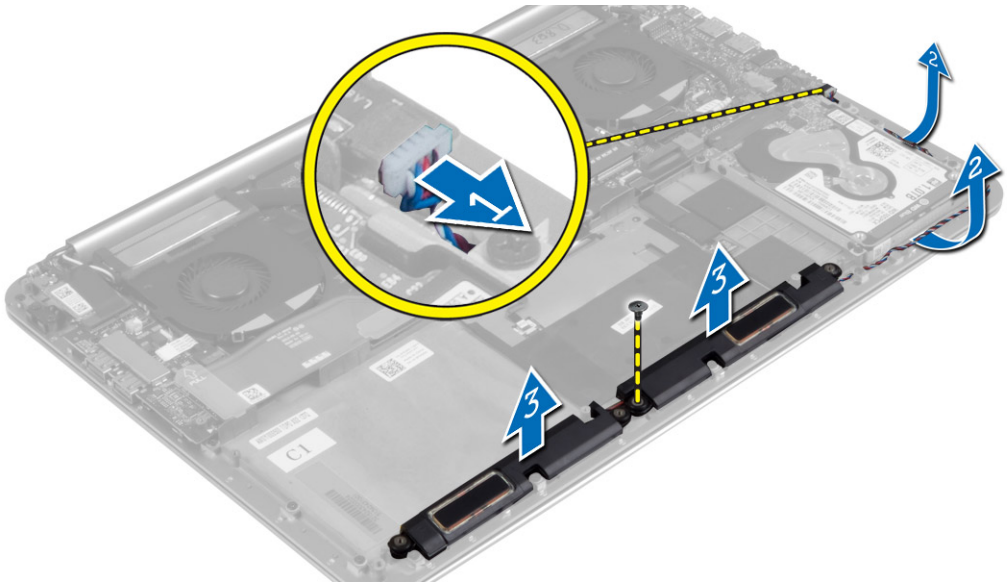


Installing the Hard Drive

1. Align the screw holes on the hard drive-bracket with the screw holes on the hard drive.
2. Tighten the screws that secure the hard-drive bracket to the hard drive.
3. Connect the interposer to the hard drive.
4. Tighten the screws to secure the hard drive to the palmrest assembly.
5. Connect the hard-drive cable to the system board.
6. Install the:
   a) battery
   b) base cover
7. Follow the procedures in *After Working Inside Your Computer.*

Removing the Speakers

1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove the:
   a) base cover
   b) battery
3. Perform the following steps to remove the speaker:
   a) Disconnect the speaker cable from the system board.
   b) Unroute the speaker cable and remove the cable from the routing tabs.
   c) Remove the screw that secures the speakers to the palmrest assembly.
   d) Lift the speakers, along with the speaker cable, off the palmrest assembly.

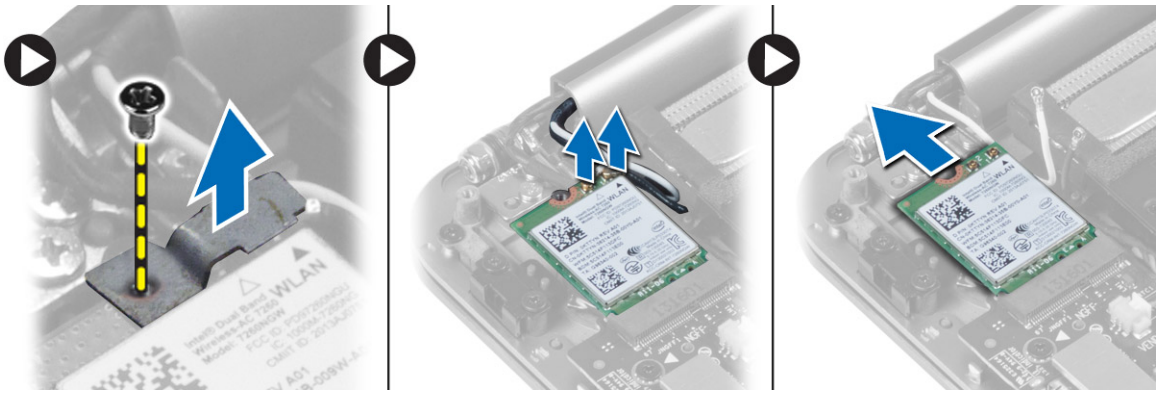


Installing the Speakers

1. Align the speakers in the slot on the palmrest assembly.
2. Route the speaker cable through the routing tabs on the palmrest assembly.
3. Tighten the screw to secure the speakers to the palmrest assembly.
4. Connect the speaker cable to the system board.
5. Install the:
   a) battery
   b) base cover
6. Follow the procedures in *After Working Inside Your Computer*.

Removing the Wireless Local Area Network (WLAN) Card

1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove the:
   a) base cover
   b) battery
3. Perform the following steps to remove the WLAN card:
   a) Remove the screw to release the bracket that secures the WLAN card to the computer.
   b) Disconnect the antenna cables from the WLAN card.
   c) Slide and remove the WLAN card from its connector on the I/O board.



Installing the WLAN Card

1. Align the notch on the WLAN card with the tab on the WLAN-card connector on the I/O board.
2. Align the bracket which secures the WLAN card to the palmrest assembly.
3. Tighten the screw to secure the WLAN card to the palmrest assembly.
4. Connect the antenna cables to the WLAN card.

   CAUTION: To avoid damage to the WLAN card, do not place any cables under it.

   NOTE: The color of the antenna cables is visible near the tip of the cables. The following table provides the antenna-cable color scheme for the WLAN card supported by your computer.

Connectors on the WLAN card	Antenna-cable color
Main (white triangle)	white
Auxiliary (black triangle)	black

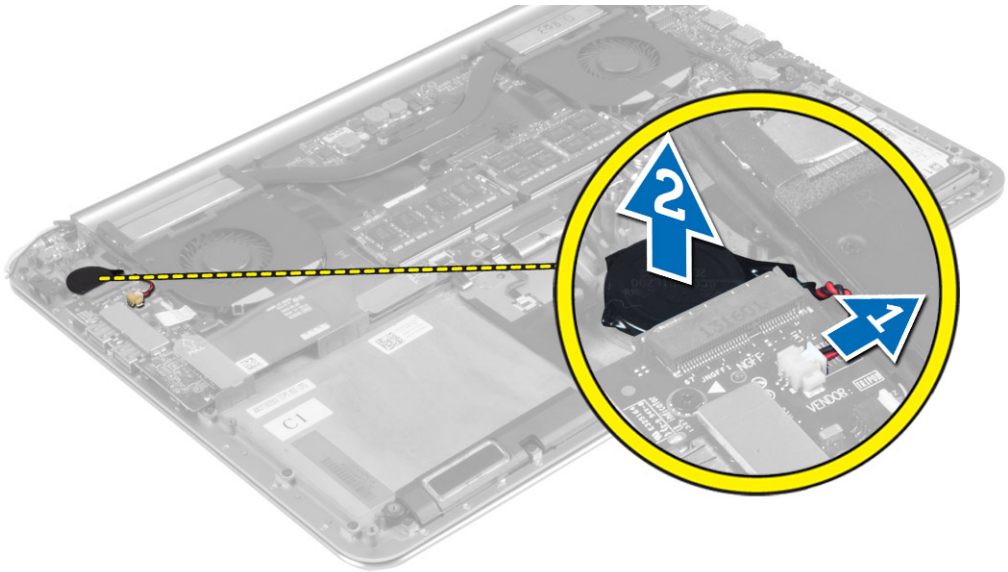
5. Install the:
   a) battery
   b) base cover
6. Follow the procedures in *After Working Inside Your Computer.*

Removing the Coin-Cell Battery

1. Follow the procedures in *Before Working Inside Your Computer.*

   CAUTION: Removing the coin-cell battery re-sets the BIOS settings to default. It is recommended that you note the BIOS settings before removing the coin-cell battery.

2. Remove the:
   a) base cover
   b) battery
   c) WLAN card
3. Perform the following steps to remove the coin-cell battery:
   a) Disconnect the coin-cell battery cable from the I/O board.
   b) Lift up and remove the coin-cell battery from the palmrest assembly.

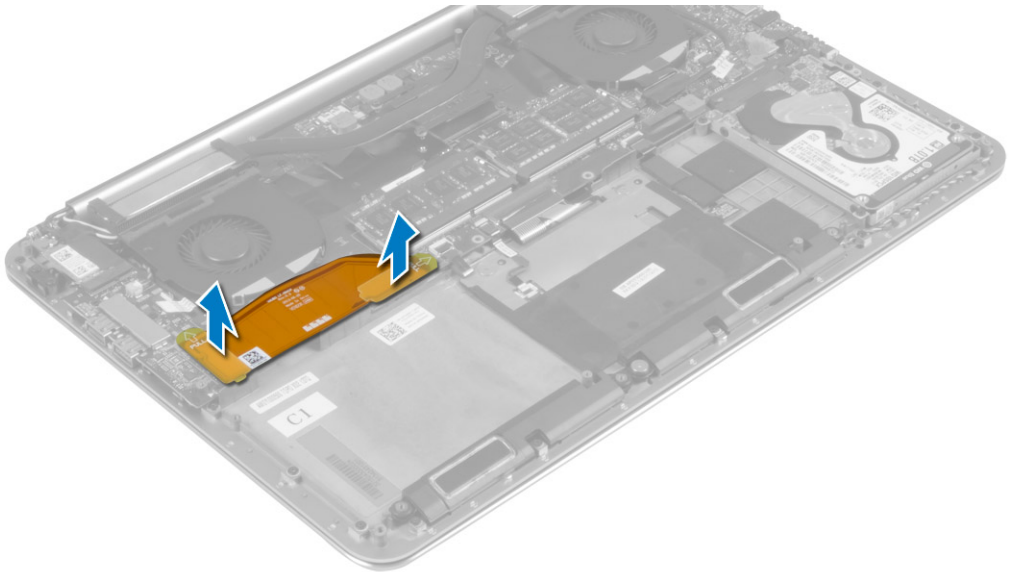


Installing the Coin-Cell Battery

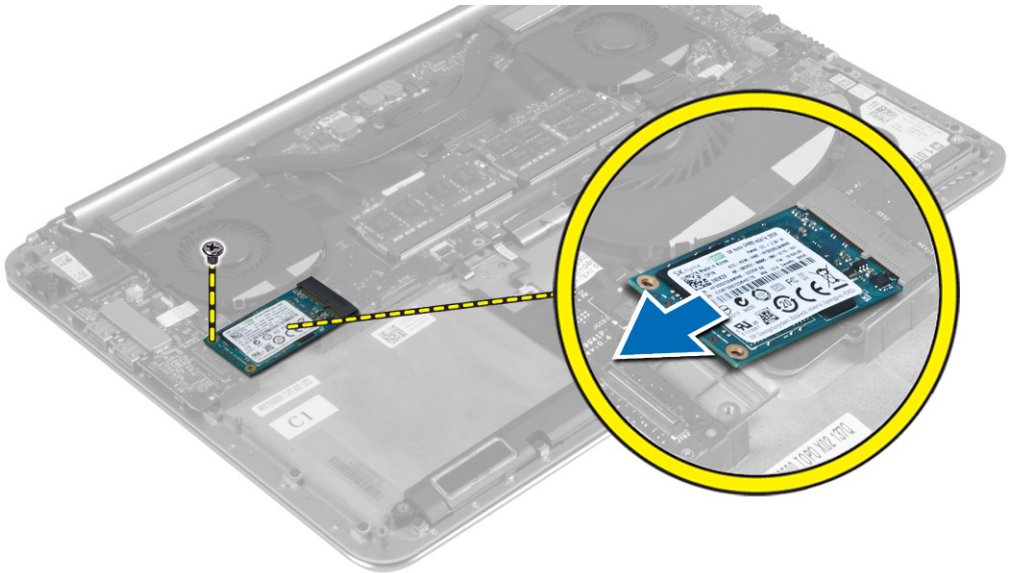
1. Replace the coin-cell battery in its slot in the computer.
2. Connect the coin-cell battery cable to the I/O board.
3. Install the:
   a) WLAN card
   b) battery
   c) base cover
4. Follow the procedures in *After Working Inside Your Computer*.

Removing the mSATA Card

1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove the:
   a) base cover
   b) battery
3. Disconnect the I/O-board cable from the system board and I/O board.



4. Remove the screw that secures the mSATA card to the palmrest assembly. Remove the mSATA card from the system board.



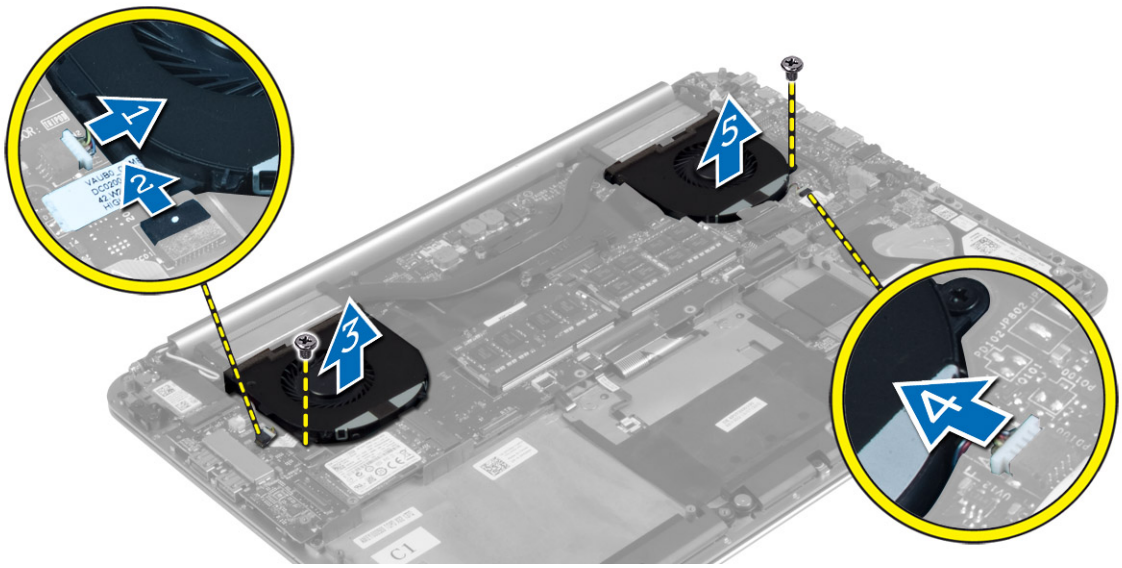
Installing the mSATA Card

1. Align the notch on the mSATA card with the tab on the mSATA-card connector.
2. Insert the mSATA card into the mSATA-card connector.
3. Tighten the screw to secure the mSATA card to the palmrest assembly.
4. Connect the I/O-board cable to the system board and I/O board.
5. Install the:
   a) battery
   b) base cover

6. Follow the procedures in *After Working Inside Your Computer.*

Removing the Fans

1. Follow the procedures in *Before Working Inside Your Computer.*
2. Remove the:
   a) base cover
   b) battery
3. Perform the following steps to remove the system fan and the video-card fan:
   a) Disconnect the camera cable from the I/O board.
   b) Disconnect the system fan cable and the video-card fan cable from the system board.
   c) Remove the screws that secure the fans to the system board.
   d) Lift the fans away from the palmrest assembly.



Installing the Fans

1. Connect the system fan cable and the video-card fan cable to the system board.
2. Connect the camera cable to the I/O board.
3. Align the screw holes on the fans with the screw holes on the palmrest assembly.
4. Tighten the screws to secure the fans to the palmrest assembly.
5. Install the:
   a) battery
   b) base cover
6. Follow the procedures in *After Working Inside Your Computer.*

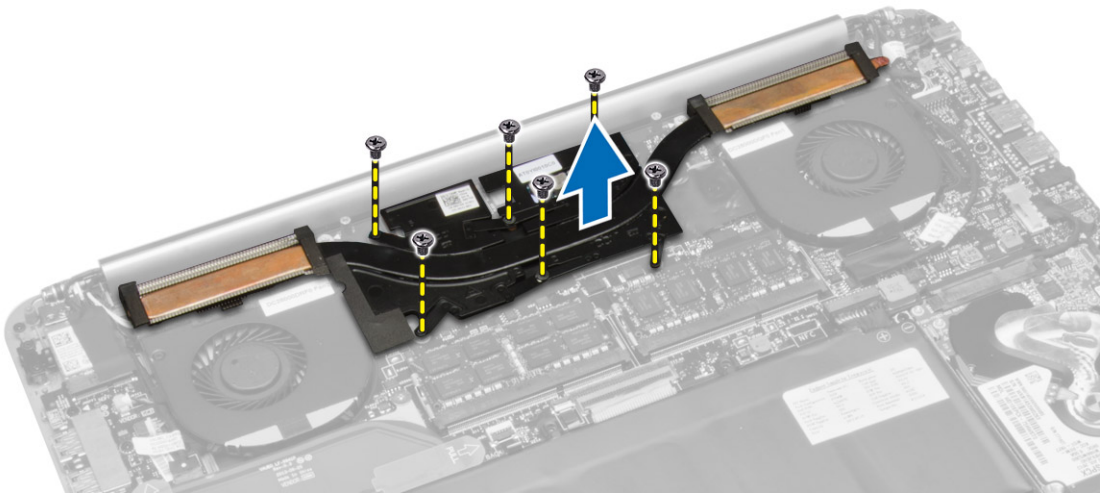
Removing the Heatsink

1. Follow the procedures in *Before Working Inside Your Computer.*
2. Remove the:

a) base cover
b) battery

NOTE: The appearance of the heatsink and the number of screws will vary if you purchased your computer with an integrated graphics card.

3. Perform the following steps to remove the heatsink:
   a) Remove the screws that secure the heatsink to the system board.
   b) Lift the heatsink off the system board.



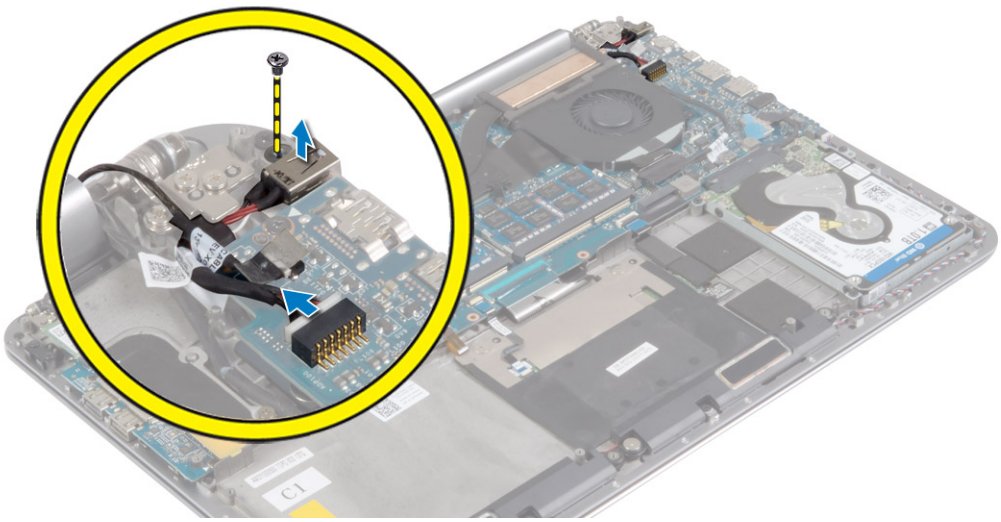
Installing the Heatsink

1. Align the screw holes on the heatsink with the screw holes on the system board.
2. Tighten the screws to secure the heatsink to the system board.
3. Install the:
   a) battery
   b) base cover
4. Follow the procedures in *After Working Inside Your Computer.*

Removing the Power-Adapter Port

1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove the:
   a) base cover
   b) battery
3. Disconnect the following cables from the system board:
   a) power-adapter port
   b) touch-panel
4. Perform the following steps to remove the power-adapter port.
   a) Release the power-adapter port cable from under the display hinge.
   b) Remove the screw that secures the power-adapter port to the palmrest assembly.

c) Lift the power-adapter port off the palmrest assembly.

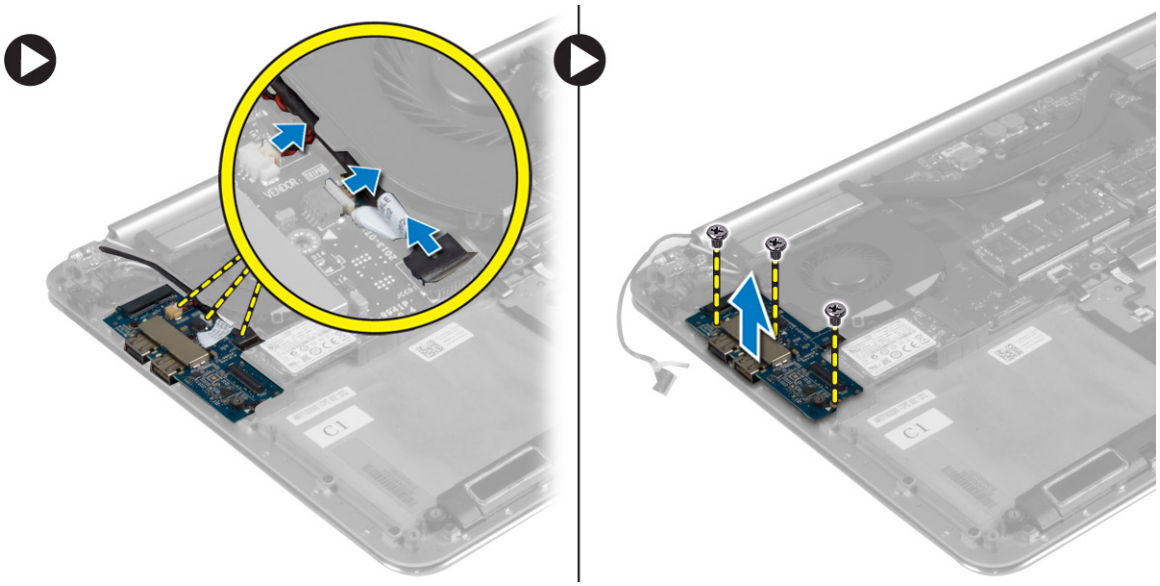


Installing the Power-Adapter Port

1. Tighten the screw to secure the power-adapter port to the palmrest assembly.
2. Route the power-adapter port cable under the display hinge.
3. Connect the following cables to the system board:
   a) touch-panel
   b) power-adapter port
4. Install the:
   a) battery
   b) base cover
5. Follow the procedures in *After Working Inside Your Computer.*

Removing the Input/Output (I/O) Board

1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove the:
   a) base cover
   b) battery
   c) WLAN card
3. Perform the following steps to remove the I/O board:
   a) Disconnect the fan, camera, and I/O board cables from the I/O board.
   b) Remove the screws that secure the I/O board to the palmrest assembly.
   c) Lift the I/O board from the palmrest assembly.

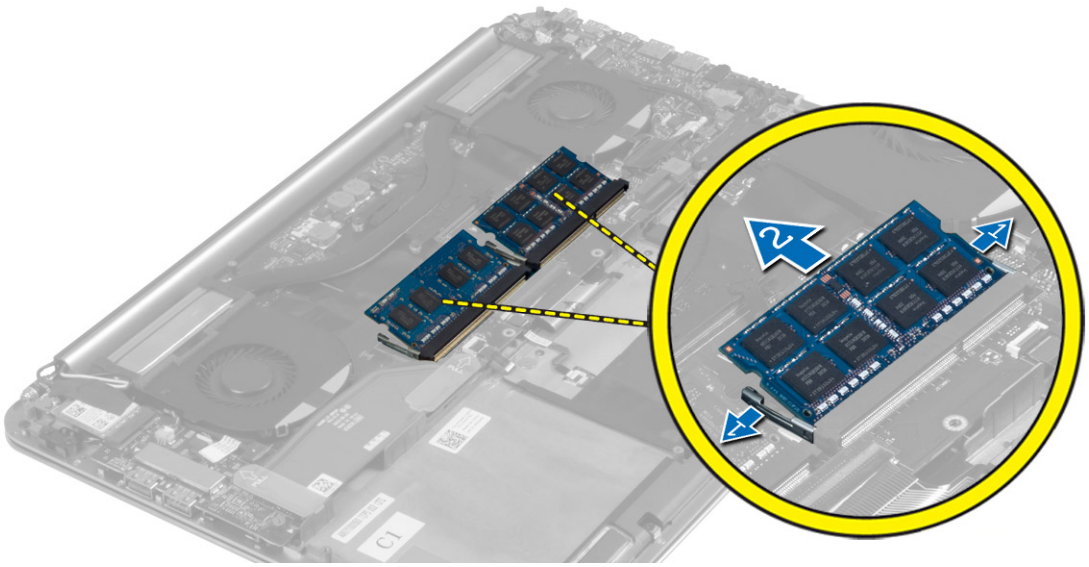


Installing the I/O Board

1. Tighten the screws to secure the I/O board to the palmrest assembly.
2. Connect the following cables to the I/O board:
   a) camera
   b) I/O board
   c) fan
3. Connect the I/O-board cable to the I/O board and the system board.
4. Install the:
   a) WLAN card
   b) battery
   c) base cover
5. Follow the procedures in *After Working Inside Your Computer.*

Removing the Memory Module(s)

1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove the:
   a) base cover
   b) battery
3. Perform the following steps to remove the memory module:
   a) Use your fingertips to carefully spread apart the securing-clips on each end of the memory-module connector until the memory module pops up.
   b) Remove the memory module from the memory-module connector.



Installing the Memory Module(s)

1. Align the notch on the memory module with the tab on the memory-module connector.
2. Slide the memory module firmly into the connector at a 45-degree angle and press the memory module down until it clicks into place.

   NOTE: If you do not hear the click, remove the memory module and re-install it.
3. Install the:
   a) battery
   b) base cover
4. Follow the procedures in *After Working Inside Your Computer.*

Removing the System Board

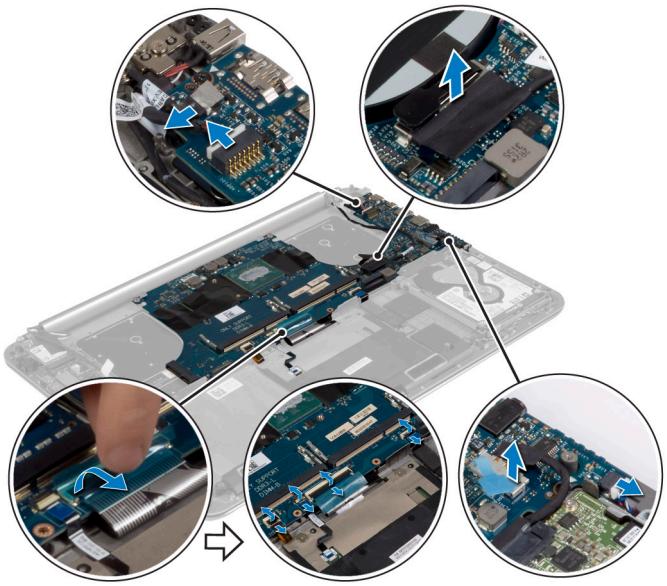
1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove the:
   a) base cover
   b) battery
   c) fans
   d) heatsink
   e) mSATA card
   f) memory modules

   NOTE: Your computer's Service Tag is located under the system badge. You must enter the Service Tag in the BIOS after you replace the system board.

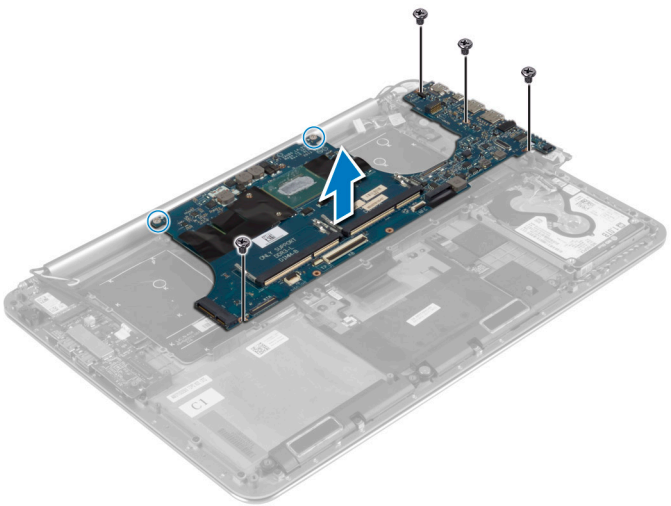
   NOTE: Before disconnecting the cables from the system board, note the location of the connectors so that you can re-connect them correctly after you replace the system board.
3. Disconnect the following cables from the system board:
   a) I/O-board
   b) speaker

c) hard drive
d) power-adapter
e) touch-panel cable
f) display cable

4. Lift the connector latches and disconnect the following cables from the system board:
   a) keyboard-backlight
   b) touchpad
   c) hard drive
   d) keyboard (after peeling off the tape and lifting the connector latch)



5. Perform the following steps to remove system board:
   a) Loosen the captive screws that secure the system board to the palmrest assembly.
   b) Remove the screws that secure the system board to the palmrest assembly.
   c) Lift the system board off the palmrest assembly.



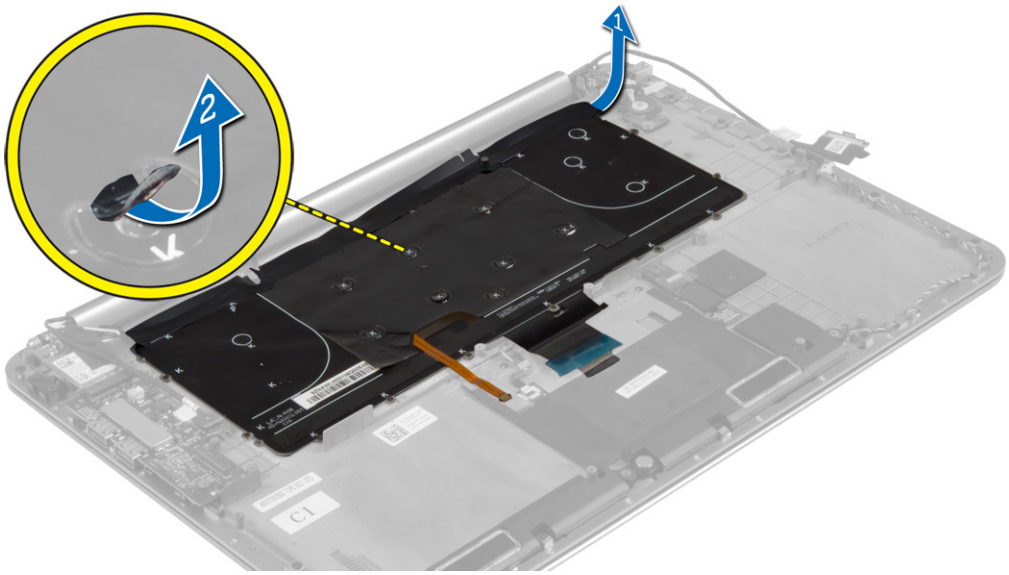
Installing the System Board

1. Align the system board on the palmrest assembly.
2. Tighten the captive screws to secure the system board to the palmrest assembly.
3. Tighten the screws to secure the system board to the palmrest assembly.
4. Slide the keyboard cable in the connector and press down on the connector latch to secure the cable.
5. Adhere the tape to the keyboard-cable connector.
6. Route the following cables on the system board and press down on the connector latches to secure the cables:
   a) hard-drive
   b) touchpad
   c) keyboard-backlight
7. Connect the following cables to the system board:
   a) display
   b) touch-panel
   c) power-adapter
   d) hard drive
   e) speaker
   f) I/O-board

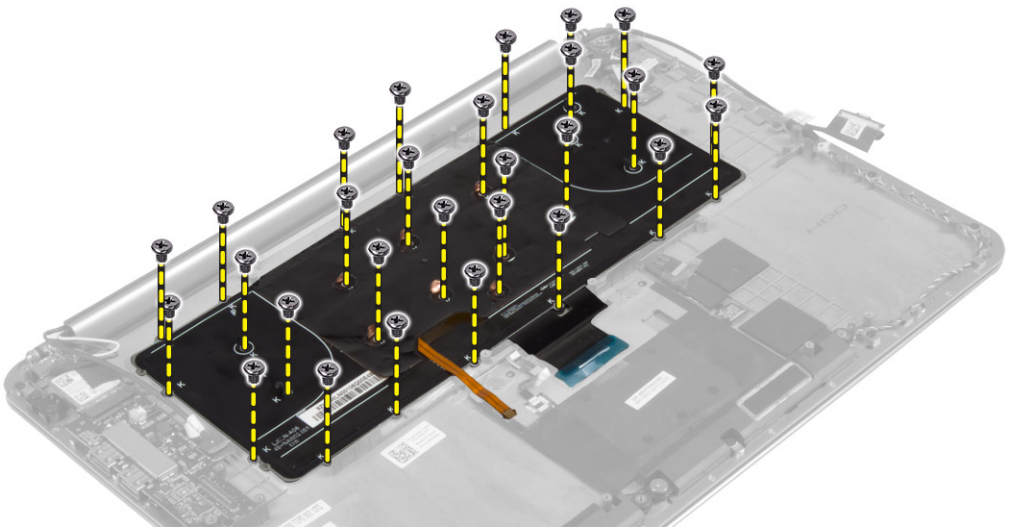
   CAUTION: Make sure that no cables are placed under the system board.
8. Install the:
   a) memory modules
   b) mSATA card
   c) heatsink
   d) fan
   e) battery
   f) base-cover assembly
9. Follow the procedures in *After Working Inside Your Computer.*

Removing the Keyboard

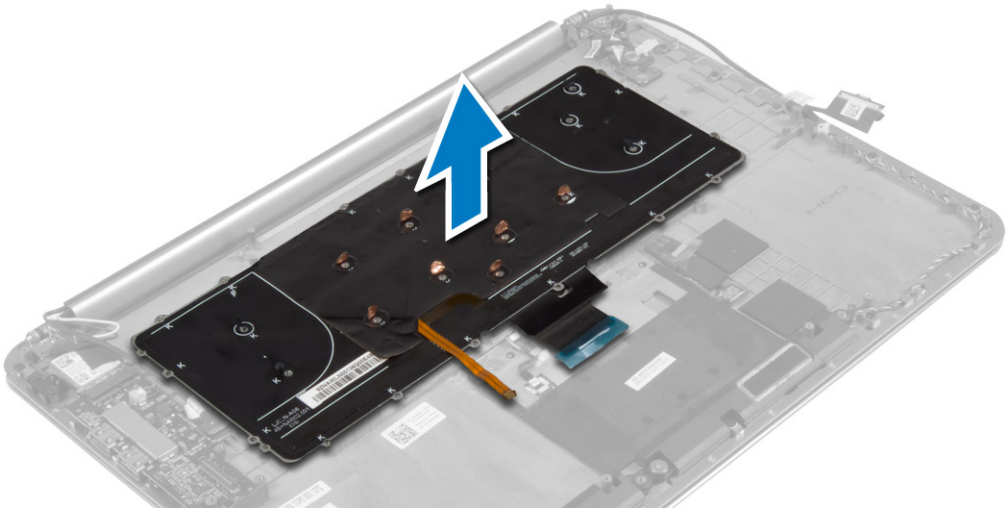
1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove the:
   a) base cover
   b) battery
   c) hard drive
   d) system board
3. Peel off the Mylar tape from the keyboard. Peel off the Mylar sheath to access the screws



4. Remove the screws that secure the keyboard to the palmrest assembly.



5. Lift and remove the keyboard from the palmrest assembly.



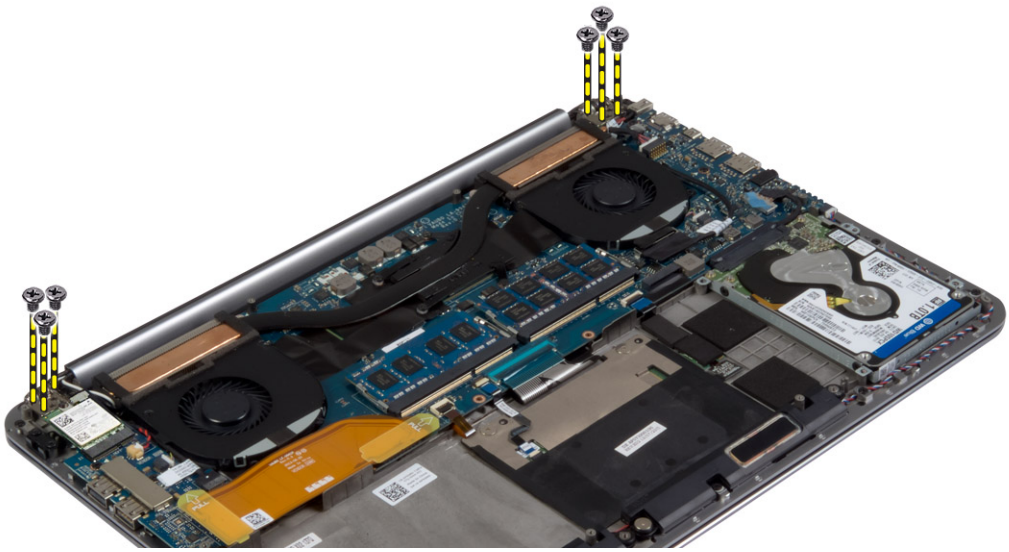
Installing the Keyboard

1. Tighten the screws to secure the keyboard to the palmrest assembly.
2. Affix the Mylar sheath to the screws on the keyboard.
3. Affix the Mylar tape to the keyboard.
4. Install the:
   a) system board
   b) hard drive
   c) battery
   d) base cover
5. Follow the procedures in *After Working Inside Your Computer.*

Removing the Display Assembly

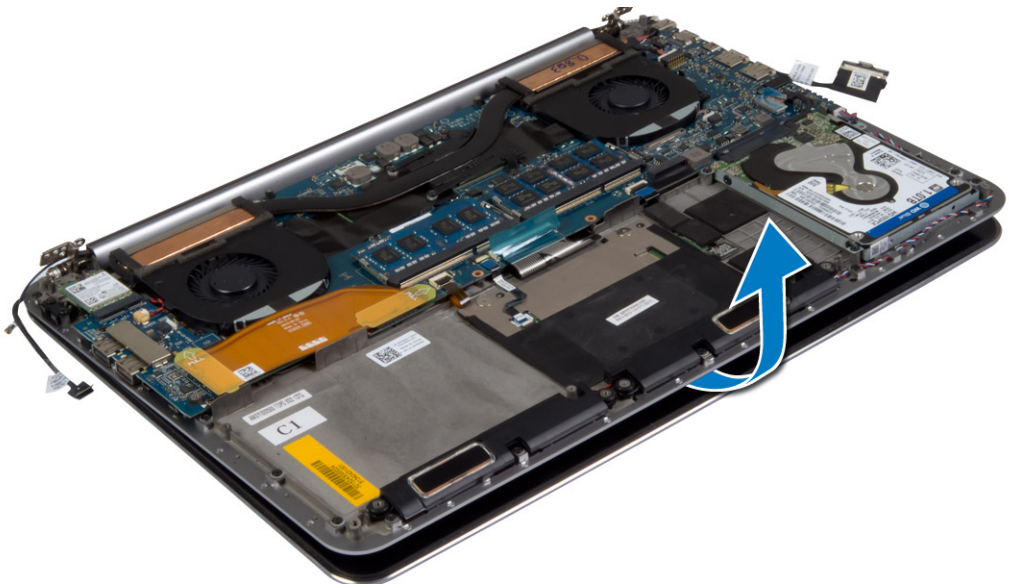
1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove the:
   a) base cover
   b) battery
3. Disconnect and remove the following cables:
   a) antenna cables from the WLAN card
   b) touch-panel cable and display cable from the system board
   c) camera cable from the I/O board

4. Remove the screws that secure the display hinges to the palmrest assembly.

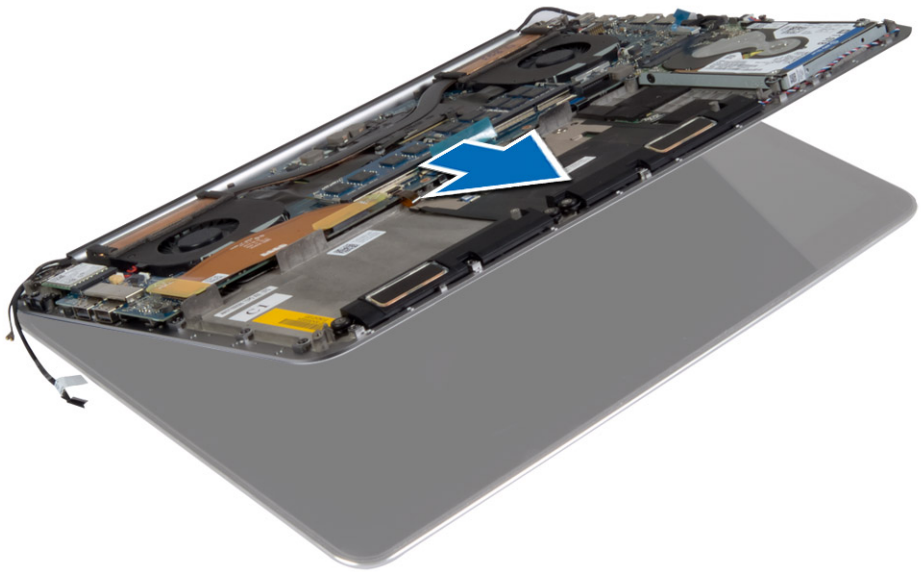


5. Lift and remove the palmrest assembly from the display assembly.

CAUTION: Lift the palmrest assembly slowly to avoid damaging the display assembly.



6. Slide the palmrest assembly away from the display assembly.



Installing the Display Assembly

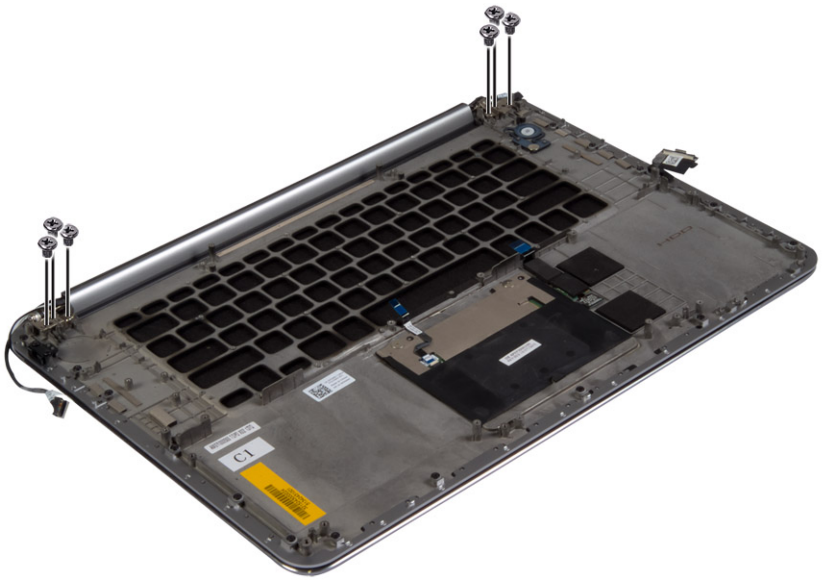
1. Align the palmrest assembly on the display assembly.
2. Tighten the screws to secure the display hinges to the palmrest assembly.
3. Route the touch-panel cable, display cable, and camera cable through the routing tabs.
4. Connect the following cables:
   a) touch-panel cable and display cable to the system board
   b) camera cable to I/O board
   c) antenna cables to the WLAN card
5. Install the:

a) battery
b) base cover

6. Follow the procedures in *After Working Inside Your Computer.*

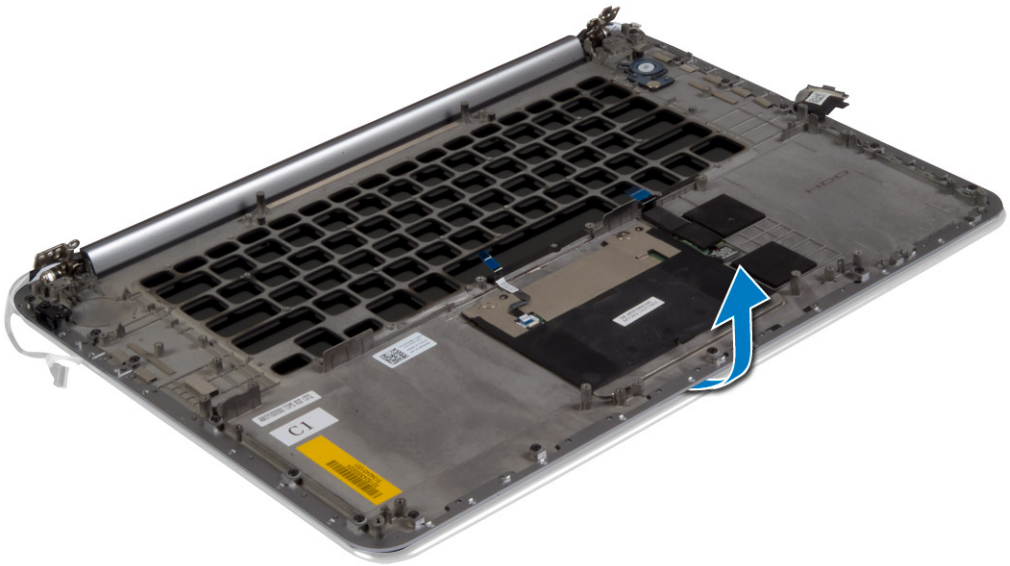
Removing the Palmrest Assembly

1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove the:
   a) base cover
   b) battery
   c) hard drive
   d) speakers
   e) WLAN card
   f) coin-cell battery
   g) mSATA card
   h) fans
   i) heatsink
   j) power-adapter port
   k) I/O board
   l) memory modules
   m) system board
   n) keyboard
3. Remove the screws that secure the display hinges to the palmrest assembly.

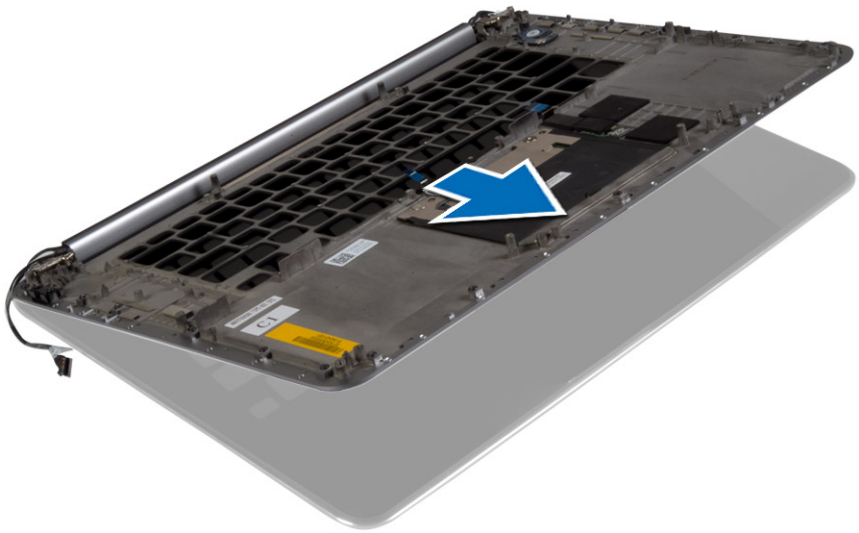


4. Lift the palmrest assembly away from the display assembly.

CAUTION: Lift the palmrest assembly slowly to avoid damaging the display assembly.



5. Remove the palmrest assembly away from the display assembly.



Installing the Palmrest Assembly

1. Align the palmrest assembly on the display assembly.
2. Tighten the screws to secure the display hinges to the palmrest assembly.
3. Press down on the palmrest assembly to close the display.
4. Install the:
   a) keyboard
   b) system board
   c) memory modules
   d) I/O board

e) power-adapter port
f) heatsink
g) fans
h) mSATA card
i) coin-cell battery
j) WLAN card
k) speakers
l) hard drive
m) battery
n) base cover

5. Follow the procedures in *After Working Inside Your Computer.*

3

System Setup

System Setup enables you to manage your computer hardware and specify BIOS-level options. From the System Setup, you can:

- Change the NVRAM settings after you add or remove hardware
- View the system hardware configuration
- Enable or disable integrated devices
- Set performance and power management thresholds
- Manage your computer security

Boot Sequence

Boot Sequence allows you to bypass the System Setup-defined boot device order and boot directly to a specific device (for example: optical drive or hard drive). During the Power-on Self Test (POST), when the Dell logo appears, you can:

- Access System Setup by pressing <F2> key
- Bring up the one-time boot menu by pressing <F12> key

The one-time boot menu displays the devices that you can boot from including the diagnostic option. The boot-menu options are:

- Removable Drive (if available)
- STXXXX Drive

  NOTE: XXX denotes the SATA drive number.
- Optical Drive
- Diagnostics

  NOTE: Choosing Diagnostics, will display the **ePSA diagnostics** screen.

The boot sequence screen also displays the option to access the System Setup screen.

Navigation Keys

The following table displays the system setup navigation keys.

NOTE: For most of the system setup options, changes that you make are recorded but do not take effect until you re-start the system.

Table 1. Navigation Keys

Keys	Navigation
Up arrow	Moves to the previous field.
Down arrow	Moves to the next field.
<Enter>	Allows you to select a value in the selected field (if applicable) or follow the link in the field.
Spacebar	Expands or collapses a drop-down list, if applicable.
<Tab>	Moves to the next focus area. NOTE: For the standard graphics browser only.
<Esc>	Moves to the previous page till you view the main screen. Pressing <Esc> in the main screen displays a message that prompts you to save any unsaved changes and restarts the system.
<F1>	Displays the System Setup help file.

System Setup Options

NOTE: Depending on your computer and its installed devices, the items listed in this section may or may not appear.

Table 2. Main

Option	Description
System Time/Date	Allows you to set the date and time.
BIOS Version	Displays the BIOS version.
Product Name	Displays the product name. **Dell Precision M3800** (Default Setting)
Service Tag	Displays the service tag.
Asset Tag	Displays the asset tag. **None** (Default Setting)
CPU Type	Displays the CPU type.
CPU Speed	Displays the CPU speed.
CPU ID	Displays the CPU ID.
CPU Cache	Displays the sizes of the CPU caches.
Fixed HDD	Displays the type and size of the HDD. **WDC WD10SPCX-75HWSTO (1000 GB)** (Default Setting)
mSATA Device	Displays the type and size of the mSATA device.
AC Adapter Type	Displays the type of the AC adapter. **None** (Default Setting)
System Memory	Displays the size of the system memory.

Option	Description
Extended Memory	Displays the size of the extended memory.
Memory Speed	Displays the speed of the memory.
Keyboard Type	Displays the type of keyboard. **Backlite** (Default Setting)

Table 3. Advanced

Option	Description
Intel (R) SpeedStep (TM)	Allows you to enable or disable the Intel (R) SpeedStep (TM) feature. **Enabled** (Default Setting)
Virtualization	This option specifies whether a Virtual Machine Monitor (VMM) can utilize the additional hardware capabilities provided by Intel Virtualization technology. Allows you to enable or disable the Virtualization feature. **Enabled** (Default Setting)
USB Emulation	Allows you to enable or disable the USB Emulation feature. **Enabled** (Default Setting)
USB PowerShare	Allows you to enable or disable the USB PowerShare feature. **Enabled** (Default Setting)
SATA Operation	Displays the SATA Operation information.
Adapter Warnings	Allows you to enable or disable the adapter warnings feature.
Multimedia Key Behaviour	**Function Key** (Default Setting)
Battery Health	Displays the battery health information.
Intel (R) Rapid Start Technology	Allows you to enable or disable the Intel (R) Rapid Start Technology feature. **Enabled** (Default Setting)
Battery Charge Configuration	**Adaptive** (Default Setting)
Miscellaneous Devices	Allows you enable or disable the various on board devices. The options are: • **External USB Ports** - **Enabled** (Default Setting) • **USB Debug** - **Disabled** (Default Setting)

Table 4. Security

Option	Description
Unlock Setup Status	**Unlocked** (Default Setting)
Admin Password Status	Displays the status of the admin password. Default Setting: **Not set**
System Password Status	Displays the status of the system password. Default Setting: **Not set**
HDD Password Status	Displays the status of the system password. Default Setting: **Not set**
Asset Tag	Allows you to set the asset tag.
Admin Password	Allows you to set, change, or delete the administrator (admin) password. **NOTE:** You must set the admin password before you set the system or hard drive password. **NOTE:** Successful password changes take effect immediately. **NOTE:** Deleting the admin password automatically deletes the system password and the hard drive password. **NOTE:** Successful password changes take effect immediately.
System Password	Allows you to set, change or delete the system password. **NOTE:** Successful password changes take effect immediately.
HDD Password	Allows you to set, change or delete the administrator password.
Password Change	Allows you to enable or disable permissions to set a System password and a Hard Drive password when the admin password is set. Default Setting: **Permitted**
Computrace	Allows you to activate or disable the optional Computrace software The options are: • **Deactivate** (Default Setting) • Activate **NOTE:** The Activate and Disable options will permanently activate or disable the feature and no further changes will be allowed.
TPM Security	This option lets you control whether the Trusted Platform Module (TPM) in the system is enabled and visible to the operating system. When disabled the BIOS will not turn On the TPM During POST. The TPM will be non-functional and invisible to the operating system. When enabled, the BIOS will turn On the TPM during POST so that it can be used by the operating system. This option is **Enable** by default.

Option	Description
	NOTE: Disabling this option does not change any settings you may have made to the TPM, nor does it delete or change any information or keys you may have stored there. It simply turns Off the TPM so that it cannot be used. When you re-enable this option, the TPM will function exactly as it did before it was disabled. **NOTE:** Changes to this option take effect immediately.

Table 5. Boot

Option	Description
Boot List Option	Default Setting: **Legacy**
Secure Boot	This option enables or disables the Secure Boot feature. • **Disabled** (Default Setting) - Windows 7 • Enabled - Windows 8.1
Load Legacy Option ROM	This option enables or disables the Load Legacy Option ROM feature. • **Enabled** (Default Setting) - Windows 7 • Disabled - Windows 8.1
Set Boot Priority	Allows you to change the order in which the computer attempts to find an operating system: • 1 st Boot Priority [CD/DVD/CD-RW Drive] • 2nd Boot Priority [Network] • 3rd Boot Priority [mini SSD] • 4th Boot Priority [USB Storage Device • 5th Boot Priority [Hard Drive] • 6th Boot Priority [Diskette Drive]

Table 6. Exit

Option	Description
Save Changes and Reset	Allows you to save the changes you made.
Discard Changes and Reset	Allows you to discard the changes you made.
Restore Defaults	Allows you to restore the default options.
Discard Changes	Allows you to discard the changes you made.
Save Changes	Allows you to save the changes you made.

Updating the BIOS

It is recommended to update your BIOS (system setup), on replacing the system board or if an update is available. For laptops, ensure that your computer battery is fully charged and connected to a power outlet

1. Re-start the computer.
2. Go to **dell.com/support**.
3. Enter the **Service Tag** or **Express Service Code** and click **Submit**.

   NOTE: To locate the Service Tag, click **Where is my Service Tag?**

   NOTE: If you cannot find your Service Tag, click **Detect Service Tag**. Proceed with the instructions on screen.
4. If you are unable to locate or find the Service Tag, click the Product Category of your computer.
5. Choose the **Product Type** from the list.
6. Select your computer model and the **Product Support** page of your computer appears.
7. Click **Drivers & Downloads**.
8. On the Drivers and Downloads screen, under the **Operating System** drop-down list, select **BIOS**.
9. Identify the latest BIOS file and click **Download File**.
10. Select your preferred download method in the **Please select your download method below window**; click **Download File**.

    The **File Download** window appears.
11. Click **Save** to save the file on your computer.
12. Click **Run** to install the updated BIOS settings on your computer.

    Follow the instructions on the screen.

System and Setup Password

You can create a system password and a setup password to secure your computer.

Password Type	Description
System password	Password that you must enter to log on to your system.
Setup password	Password that you must enter to access and make changes to the BIOS settings of your computer.

CAUTION: The password features provide a basic level of security for the data on your computer.

CAUTION: Anyone can access the data stored on your computer if it is not locked and left unattended.

NOTE: Your computer is shipped with the system and setup password feature disabled.

Assigning a System Password and Setup Password

You can assign a new **System Password** and/or **Setup Password** or change an existing **System Password** and/or **Setup Password** only when **Password Status** is **Unlocked**. If the Password Status is **Locked**, you cannot change the System Password.

NOTE: If the password jumper is disabled, the existing System Password and Setup Password is deleted and you need not provide the system password to log on to the computer.

To enter a system setup, press <F2> immediately after a power-on or re-boot.

1. In the **System BIOS** or **System Setup** screen, select **System Security** and press <Enter>.
   The **System Security** screen appears.
2. In the **System Security** screen, verify that **Password Status** is **Unlocked**.
3. Select **System Password** , enter your system password, and press <Enter> or <Tab>.
   Use the following guidelines to assign the system password:
   - A password can have up to 32 characters.
   - The password can contain the numbers 0 through 9.
   - Only lower case letters are valid, upper case letters are not allowed.
   - Only the following special characters are allowed: space, ("), (+), (,), (-), (.), (/), (;), ([), (\), (]), (`).

   Re-enter the system password when prompted.
4. Type the system password that you entered earlier and click **OK**.
5. Select **Setup Password**, type your system password and press <Enter> or <Tab>.
   A message prompts you to re-type the setup password.
6. Type the setup password that you entered earlier and click **OK**.
7. Press <Esc> and a message prompts you to save the changes.
8. Press <Y> to save the changes.
   The computer reboots.

Deleting or Changing an Existing System and/or Setup Password

Ensure that the **Password Status** is Unlocked (in the System Setup) before attempting to delete or change the existing System and/or Setup password. You cannot delete or change an existing System or Setup password, if the **Password Status** is Locked.

To enter the System Setup, press <F2> immediately after a power-on or reboot.

1. In the **System BIOS** or **System Setup** screen, select **System Security** and press <Enter>.
   The **System Security** screen is displayed.
2. In the **System Security** screen, verify that **Password Status** is **Unlocked**.
3. Select **System Password**, alter or delete the existing system password and press <Enter> or <Tab>.
4. Select **Setup Password**, alter or delete the existing setup password and press <Enter> or <Tab>.

   NOTE: If you change the System and/or Setup password, re-enter the new password when promoted. If you delete the System and/or Setup password, confirm the deletion when promoted.
5. Press <Esc> and a message prompts you to save the changes.
6. Press <Y> to save the changes and exit from the System Setup.
   The computer reboots.

4

Diagnostics

If you experience a problem with your computer, run the ePSA diagnostics before contacting Dell for technical assistance. The purpose of running diagnostics is to test your computer's hardware without requiring additional equipment or risking data loss. If you are unable to fix the problem yourself, service and support personnel can use the diagnostics results to help you solve the problem.

Enhanced Pre-Boot System Assessment (ePSA) Diagnostics

The ePSA diagnostics (also known as system diagnostics) performs a complete check of your hardware. The ePSA is embedded with the BIOS and is launched by the BIOS internally. The embedded system diagnostics provides a set of options for particular devices or device groups allowing you to:

- Run tests automatically or in an interactive mode
- Repeat tests
- Display or save test results
- Run thorough tests to introduce additional test options to provide extra information about the failed device(s)
- View status messages that inform you if tests are completed successfully
- View error messages that inform you of problems encountered during testing

CAUTION: Use the system diagnostics to test only your computer. Using this program with other computers may cause invalid results or error messages.

NOTE: Some tests for specific devices require user interaction. Always ensure that you are present at the computer terminal when the diagnostic tests are performed.

1. Power-on the computer.
2. As the computer boots, press the <F12> key as the Dell logo appears.
3. On the boot menu screen, select the **Diagnostics** option.
   The **Enhanced Pre-boot System Assessment** window is displayed, listing all devices detected in the computer. The diagnostics starts running the tests on all the detected devices.
4. If you wish to run a diagnostic test on a specific device, press <Esc> and click **Yes** to stop the diagnostic test.
5. Select the device from the left pane and click **Run Tests**.
6. If there are any issues, error codes are displayed.
   Note the error code and contact Dell.

Device Status Lights

Icon	Description
	Turns on when you turn on the computer and blinks when the computer is in a power management mode.
	Turns on when the computer reads or writes data.
	Turns on steadily or blinks to indicate battery charge status.
	Turns on when wireless networking is enabled.

Battery Status Lights

If the computer is connected to an electrical outlet, the battery light operates as follows:

Alternately blinking amber light and white light	An unauthenticated or unsupported non-Dell AC adapter is attached to your laptop.
Alternately blinking amber light with steady white light	Temporary battery failure with AC adapter present.
Constantly blinking amber light	Fatal battery failure with AC adapter present.
Light off	Battery in full charge mode with AC adapter present.
White light on	Battery in charge mode with AC adapter present.

5

Technical Specifications

NOTE: Offerings may vary by region. For more information regarding the configuration of your computer, click Start **(Start icon)** → **Help and Support**, and then select the option to view information about your computer.

Table 7. System Information

Feature	Specification
System Chipset	Mobile Intel 8 Series Chipset
DMA Channels	Two VT-d DMA remap engines
Interrupt Levels	Intel® 64 and IA-32 Architecture
BIOS Chip (NVRAM)	8 MB

Table 8. Processor

Feature	Specification
Processor type	Intel Core i7 Quad Core
L1 cache	Up to 256 KB cache depending on processor type
L2 cache	Up to 1024 KB cache depending on processor type
L3 cache	Up to 6144 KB cache depending on processor type

Table 9. Memory

Feature	Specification
Type	DDR3L
Speed	1600 MHz
Connectors	2 SoDIMM Sockets
Capacity	8 GB, 12 GB, and 16 GB
Minimum Memory	8 GB
Maximum memory	16 GB

Table 10. Video

Feature	Specification
Type	Discrete
Data bus	PCIE x16, Gen3

Feature	Specification
Video controller and memory:	NVIDIA Quadro K1100M , 2 GB GDDR5(4 Pcs 128Mx32), 1.5 V based

Table 11. Audio

Feature	Specification
Integrated	dual-channel High-Definition audio

Table 12. Communication

Feature	Specification
Network adapter	Ethernet via USB-to-Ethernet Dongle provided in box **NOTE:** No RJ45 (10/100/1000Base-T, IPv6) provided.
Wireless	Wireless On/Off implemented via keyboard wireless key • WLAN and Bluetooth BT 4.0 + LE combo card support • Bluetooth 2.1/3.0/4.0/4.1 with Wi-Fi combo module

Table 13. Ports and Connectors

Feature	Specification
Audio	• Microphone/Headphone Universal Audio jack support • Autosense Headphone/Microphone combo jack support (1/8 inches connector)
USB 2.0	one
USB 3.0	three
Video	• Mini-DisplayPort DP 1.2 support • HDMI 1.4a with audio; Intel Media Vault support through HDMI port
Memory card reader	SD 4.0

Table 14. Display

Feature	Specification
Type	1366 X 768 pixels
Size	15.6 inches
Dimensions:	
Height	254.0 mm (9.99 inches)
Width	372.0 mm (14.64 inches)
Diagonal	396.24 mm (15.60 inches)

Feature	Specification
Active area (X/Y)	344.16 mm X 193.59 mm / 345.60 mm X 194.40 mm (13.5 inches X 7.62 inches / 13.60 inches X 7.65 inches)
Maximum resolution	1920 X 1080 pixels / 3200 X 1800 pixels
Maximum Brightness	400 nits
Operating angle	0° (closed) to 135°
Refresh rate	60 Hz
Minimum viewing angles:	
Horizontal	80/80
Vertical	80/80

Table 15. Keyboard

Feature	Specification
Number of keys	• United States: 80 keys • United Kingdom: 81 keys • Brazil: 81 keys • Japan: 84 keys
Layout	QWERTY/AZERTY/Kanji

Table 16. Touchpad

Feature	Specification
Active Area:	
X-axis	105 mm
Y-axis	80 mm

Table 17. Camera

Feature	Specification
Type	HD Camera / Digital Array Microphone
Still Resolution	0.92 megapixels (Maximum)
Video Resolution	1280 x 720 Pixels @ 30 Frame Per Seconds (Maximum)
Diagonal	74 degrees

Table 18. Storage

Feature	Specification
Storage:	
Storage Interface	SATA 3 (6 Gb/s)
Drives configurations:	

Feature	Specification
Hard Drives (optional)	one internal 2.5 inch SATA HDD
Solid State Drives (optional)	One Solid State Drive (SSD), Full Mini Card (FMC)
Size:	128 GB, 256 GB, 500 GB, 512 GB, and 1 TB

Table 19. Battery

Feature	Specification
Type	Li-polymer 6-cell (61 Wh) / 6-cell (91 Wh)
Dimensions :	
61 Wh :	
Depth	92.65 mm (3.64 inches)
Height	9 mm (0.35 inches)
Width	270 mm (10.62 inches)
Weight	320 g (0.70 lb)
91 Wh :	
Depth	92.65 mm (3.64 inches)
Height	9 mm (0.35 inches)
Width	342.45 mm (13.48 inches)
Weight	443 g (0.97 lb)
Voltage	11.1 V
Temperature range:	
Operating (approximate)	• Charge : 0 °C to 50 °C (32 °F to 158 °F) • Discharge: 0 °C to 70 °C (32 °F to 122 °F) • Operating: 0 °C to 35 °C (32 °F to 95 °F)
Non-operating	–40 °C to 65 °C (–40 °F to 149 °F)
Coin-cell battery	3 V CR2032 lithium-ion cell

Table 20. AC Adapter

Feature	Specification
Input voltage	100 VAC to 240 VAC
Input current (maximum)	1.80 A
Input frequency	50 Hz to 60 Hz
Output power	130 W
Output current	6.67 A
Rated output voltage	19.50 VDC

Feature	Specification
Dimensions:	
Height	22 mm (0.86 inches)
Width	66 mm (2.59 inches)
Depth	143 mm (5.62 inches)
Temperature range:	
Operating	0 °C to 40 °C (32 °F to 104 °F)
Non Operating	–40 °C to 70 °C (–40 °F to 158 °F)

Table 21. Physical Dimensions

Physical	Specification
Height:	18 mm to 18.37 mm max (0.70 inches to 0.72 inches)
Width	372.2 mm (14.60 inches)
Depth	253.9 mm (9.99 inches)
Weight (Minimum)	1.31 kg (4.5 lb)

Table 22. Environmental

Feature	Specification
Temperature range:	
Operating	0 °C to 40 °C (32 °F to 104°F)
Storage	–40 °C to 70 °C (–40 °F to 158 °F)
Relative humidity (maximum):	
Operating	10 % to 90 % (non-condensing)
Storage	10 % to 95 % (non-condensing)
Maximum vibration:	
Operating	0.66 GRMS, 2 Hz - 600 Hz
Storage	1.3 GRMS, 2 Hz - 600 Hz
Maximum shock:	
Operating	110 G, 2 ms
Non-operating	160 G, 2 ms
Altitude:	
Operating	15.2 m to 3048 m (–50 ft to 10,000 ft)
Storage	15.2 m to 10,668 m (–50 ft to 35,000 ft)
Airborne contaminant level	G1 as defined by ISA-S71.04-1985

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Contacting Dell

NOTE: If you do not have an active Internet connection, you can find contact information on your purchase invoice, packing slip, bill, or Dell product catalog.

Dell provides several online and telephone-based support and service options. Availability varies by country and product, and some services may not be available in your area. To contact Dell for sales, technical support, or customer service issues:

1. Visit **dell.com/support**
2. Select your support category.
3. Verify your country or region in the Choose a Country/Region drop-down menu at the top of page.
4. Select the appropriate service or support link based on your need.